

5 MAP SPECIFICATION FOR SKI-ORIENTEERING

5.1 General

Maps for ski orienteering are based on the specifications for foot-orienteering maps. However in order to meet the specific requirements put on the map by the nature of ski orienteering, certain deviations and additions to the foot-orienteering map specification is needed. These special rules and symbols are described in this chapter.

Deviations from the specifications are permissible only with the sanction of the national Ski-O Commission. For international events, sanction must be given by the IOF Ski-O Commission.

Complete foot-orienteering maps may be used in ski-o competitions at all levels, if the dark green (symbol 410) is replaced by light green (symbol 406). For international events, permission from the IOF Ski-O Commission is required.

5.2 Content

Ski orienteering is a sport in which the ski-orienteer uses the map to navigate a track and route network in order to visit a number of control points. In ski-o the competitor's skiing and navigation skills shall be tested in such way that the navigation skill becomes the decisive element.

Ski orienteering takes place in the track network, and involves as a basic element complex route choice problems, including the estimating of height differences. It is obvious that the map must concentrate on clearly depicting these features. The map must also be legible when skiing at high speed. This means that the map should omit a large part of details in "free" terrain in order to exaggerate the track network and to simplify the presentation of the shape of the ground. Only details that impact a) route choice and b) navigation and positioning, need to be shown on the map.

In order to accomplish fairness in route choice, additional symbols need to be introduced. These symbols describe the quality and width of the tracks.

5.3 Scale

The map scale for long distance races should be 1:15000, for medium distance and relay 1:15000 or 1:10000, for short distance 1:10000 and for sprint distance 1:10000 or 1:5000. In special cases in IOF events, the organiser and the IOF Event Advisor may decide on other map scales. National Ski-O Commission can do the same in national events.

The magnification in scale has made it possible to build a more dense and easily legible track network. Furthermore, the error probability has decreased, as the shapes of the junctions and the departure angles of the tracks can be drawn correctly on the map.

5.4 Contour interval

Contour interval should mainly be 5 m, but other alternatives (2.5 m or 10 m) can be used. In special cases in IOF events, the organiser and the IOF Event Advisor may decide on other contour interval. National Ski-O Commission can do the same in national events.

5.5 Colours

The correct order of colours plays an important role in the legibility of a ski-O map. The order of colours of a ski-O map printed with a colour printer is to be as follows:

1. upper purple: control numbers and control codes, out-of-bounds areas, sanded or snowless roads and the start symbol as well as focus point when necessary
2. black
3. brown
4. upper green (PMS 354): tracks
5. lower purple: control points and lines between them
6. blue
7. lower green (PMS 361): all other green symbols except tracks
8. yellow

The order of the colours in a map printed by offset method is the same, so the printing order is opposite from the one mentioned in the list.

The contour lines are drawn over the tracks. This requires a colour printer of high quality so that the brown lines will not disturb the visibility of the tracks. Considering the amount of contour lines and tracks the organiser and the IOF Event Advisor may decide also to print track green over contour lines for better track readability.

5.6 Printing and reproduction

Ski-orienteeing maps are often updated very close to a competition. The track network may be revised only a few days before an event. Therefore new digital printing methods (using digital colour press, laser printers, colour copiers with data connections etc.) are well suited for ski-orienteeing maps. It is possible to hold all IOF competitions on non-offset printed maps as well.

The responsibility for the quality of the map would belong to the organiser and the IOF Event Advisor.

5.7 Recommended symbols

5.7.1 Use of foot-o symbols

The following symbols from the foot-orienteeing map specification are recommended for the ski orienteeing map.

Land forms

The shape of land is shown by means of contours. In order to maintain legibility of the map when skiing at high speed the contour lines may be more generalised in comparison to foot-o maps. Form lines shall not be omitted, if they are needed in flat terrain.

101 Contour, 102 Index contour, 103 Form line, 104 Slope line, 105 Contour value, 106 Earth bank, 107 Earth wall, 109 Erosion gully, 111 Knoll, 114 Depression.

Rock and boulders

Rocks and boulders are not likely to affect route choices, but in its prominent forms they can serve as valuable object for navigation and positioning. The map may show these features when they are visible to the competitor when the terrain is covered with snow.

201 Impassable cliff, 202 Rock pillars/cliffs, 203 Passable rock face, 206 Boulder, 207 Large boulder, 208 Boulder field, 209 Boulder cluster.

Water and marsh

Besides navigation and positioning, this group is important to the competitor as it facilitates the interpretation of height (what is "up" and what is "down") in maps with complex contouring.

301 Lake, 304 Uncrossable river, 305 Crossable watercourse, 306 Crossable small watercourse, 309 Uncrossable marsh, 310 Marsh.

Open land and vegetation

The representation of vegetation is of importance to the competitor mainly for navigational purposes, but could be used for route choices in cases where the competitor chooses to try shortcuts in free terrain. In order not to destroy legibility of the green tracks, all vegetation screens must be drawn with the symbol 406 Forest: Slow running.

401 Open land, 402 Open land with scattered trees, 403 Rough open land, 404 Rough open land with scattered trees, 405 Forest: easy running, 406 Forest: slow running, 412 Orchard, 413 Vineyard, 414 Distinct cultivation boundary, 416 Distinct vegetation boundary, 417 Indistinct vegetation boundary, 418, 419, 420 Special vegetation features.

Man-made features

501 Motorway, 502 Major road, 503 Minor road, 504 Road, 509 Narrow ride, 513 Crossing point with bridge, 515 Railway, 516 Power line, 517 Major power line, 518 Tunnel, 519 Stone wall, 521 High stone wall, 522 Fence, 524 High fence, 525 Crossing point, 526 Building, 527 Settlement, 528 Permanently out of bounds, 529 Paved area, 531 Firing range, 534 Uncrossable pipeline, 535 High tower, 536 Small tower, 539, 540 Special man-made features.

509 Narrow ride is used for unploughed paths if well visible in the terrain.

5.7.2 The sizes of symbols in different scales

Scale	Track symbols	Other symbols
1:15 000	as specified in this publication	as specified in this publication
1:10 000	as specified in this publication (same as in 1:15 000)	1.5 times larger than in 1:15 000
1:5 000	1.5 times larger than in 1:15 000/1:10 000	1.5 times larger than in 1:15 000 (same as in 1:10 000)

The width of the contour lines can be narrower (0.11 mm), so that the track symbols will be shown more clearly.

5.7.3 Discipline-specific symbols

The following symbols are introduced for ski orienteering maps.

Track symbols

The track network is indicated by a variety of green line symbols. The symbols are drawn with a compact and clearly visible green colour (PMS 354 is recommended). When a track follows a path, the path is not shown (i.e. black is not used).

Contrary to all other skiable routes (marked in green), opened skiable roads are shown with a black line symbol because roads need to be distinguished from ski tracks. The skiing conditions on a road are different from those on a ski track made for skiing only. The conditions on a road can also change more rapidly (e.g. rain, snow fall, sunshine).

All junctions and crossings must be drawn solid in order to clarify the exact position of the junction or crossing. This is valid also for dotted tracks.

801 Very wide track > 3 m

Colour: upper green (PMS 354)

Width 0.85 mm

Very fast, wide ski tracks in ski centres, made with a ski trail groomer or a track leveller.

802 Wide track 1.5-3.0 m

Colour: upper green (PMS 354)

Width 0.60 mm

A fast, skateable track made by a snow mobile, width usually 2-3 m. Skateable tracks rougher and softer than the wide skateable tracks in the area.

803 Track 0.8-1.5 m

Colour: upper green (PMS 354)

Width: 0.5 mm

Length of a line 3 mm and distance between lines 0.5 mm

A good track made by a snow mobile, usually 1-1.5 m wide. In steep slopes, tracks may be made wider to reduce widening during competition.

804 Track, slow 0.8-1 m

Colour: upper green (PMS 354)

Diameter of dots 0.7 mm and distance between dots 1.3 mm

A rough, slow track with little snow or some brushwood. This symbol is not used in steep slopes, if the width of the track allows using herringbone steps for uphill, or snow plowing –technique for slowing and stopping.

In order to clarify a junction, the beginning of a slow track is drawn with a short line.

805 Road covered with snow

Colour: black

Width of line 0.7 mm

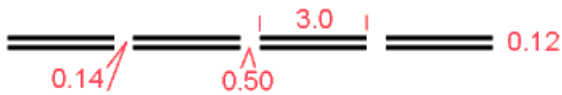
Snowploughed, skiable roads are drawn with a normal road symbol but wider.

806 Sanded or snowless road

Colour: upper purple

Height 3.0 mm

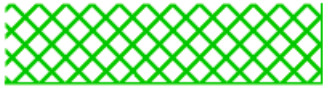
A road on the map which is sanded or snowless during the competition. A chain of V-marks across the road symbol show that the road is not skiable.



807 Unploughed road

Colour: black

A road which is not opened for traffic, no skiable track.



808 Prepared area

Colour: upper green (PMS 354)

Width of line 0.2 mm, distance between lines 0.8 mm, angle 45°

Slalom slopes (alpine skiing slopes) and other areas which are wide, skiable and hard. The boundaries of prepared areas are shown with a narrow green line (0.13 mm) so every edge can be read clearly.



809 Forbidden route

Colour: upper purple

Two purple lines across each other, length 3.5 mm

The symbol 711 Forbidden route is drawn in a bigger size in a ski-O map so that it is more clearly visible in the track network.

Other symbols



810 Control point and focus point

Colours: control point: lower purple, focus point: upper purple

Diameter of control circles 5.5 – 6.0 mm (same in all scales), width of line 0.5 mm, diameter of focus point 0.65 mm

The focus point (i.e. the point in the centre of a control circle) can be used when it is necessary to clarify the exact position of a control for instance in a dense track network. In ski-orienteeing a control is preferably placed in one track only, not in crossings or junctions. A focus point helps specify the exact track where a control is situated.

1-31

811 Control number and control code

Colour: upper purple

In ski-orienteeing, control descriptions are not used. Code numbers for controls are placed either next to control numbers on the terrain area of a map or on a separate control code list. The map size and the shape of the course are important factors in determining, which alternative is better. If the track network is dense and/or the shape of the course is complicated, the column should be chosen. There is a hyphen between a control number and a code number.



812 Equipment deposit

Colour: upper purple

Height: approx. 10 mm

A deposit for spare equipment in the terrain.